

Name: _____

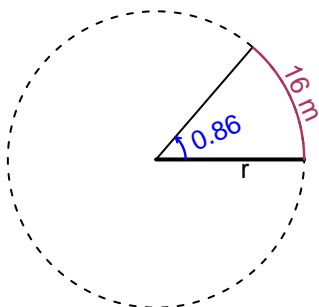
Date: _____

Trig Final (TEST v654)

- You should have a calculator (like [Desmos](#)) and a [unit-circle](#) reference sheet.

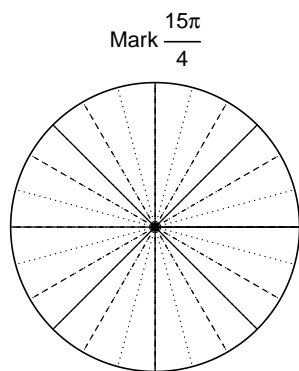
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The arc length is 16 meters. The angle measure is 0.86 radians. How long is the radius in meters?

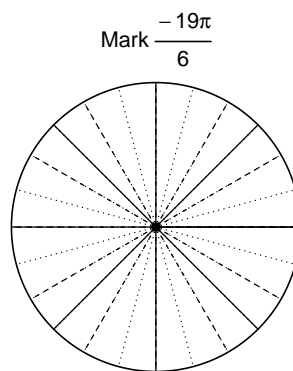


Question 2

Consider angles $\frac{15\pi}{4}$ and $\frac{-19\pi}{6}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{15\pi}{4}\right)$ and $\sin\left(\frac{-19\pi}{6}\right)$ by using a unit circle (provided separately).



Find $\cos(15\pi/4)$



Find $\sin(-19\pi/6)$

Question 3

If $\cos(\theta) = \frac{-16}{65}$, and θ is in quadrant II, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 2.48 meters, a midline at $y = -6.77$ meters, and a frequency of 5.56 Hz. At $t = 0$, the mass is at the midline and moving up. Write an equation to model the height (y in meters) as a function of time (t in seconds).